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## Mechanisms for Efficient Message Passing with Copy Avoidance in a Distributed System Using Advanced Network Devices

## ABSTRACT OF THE DISCLOSURE

An efficient mechanism for sending messages without the use of intermediate copies (i.e. without the staging of data) is provided. In particular an interface specification which allows use users of a transport protocol is defined so as to lend itself to efficient implementations. The interface specification is a complete and robust set of user functions usable within systems desiring reliable and efficient zero copy transport protocols. Two methods are provided to accomplish the implementation of an efficient zero copy protocol. The first method is especially useful in systems where the network device has limited capabilities in terms of hardware, message fragmentation and message reassembly. An additional RDRAM memory allows data to reside in an adapter while handshake operations take place between an adapter and a node so as to specify the final destination of the data. The second method takes advantage of network devices with advanced features which are exploited for maximum efficiency.